

NOTES ON SOUTH AUSTRALIAN MARINE MOLLUSCA.
WITH DESCRIPTIONS OF NEW SPECIES.—PART XIV.

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PLATES XXVI. AND XXVII.

Genus DENTALIUM.

Since 1904, when I wrote a paper on *Dentalium intercalatum*, Gould. (Trans. Roy. Soc., S.A., 1904, vol. xxviii., p. 135), I have dredged in deeper waters, up to 300 fathoms, and have explored the coastline and dredged up to 35 fathoms as far west as St. Francis Island in Nuyts Archipelago, and Point Sinclair; also at Esperance Bay, King George Sound, Ellensbrook, Yallingup, off Bunbury in Geographe Bay, and at Rottnest Island, and off Fremantle in Western Australia.

As a great amount and a much varied kind of material has thus been accumulated I propose to review my previous Notes on *Dentalium* and other South Australian genera in the light of these collections.

Bossevain in "Scaphopoda of the Siboga Expedition, 1906," p. 22, under *Dentalium intercalatum*, Gld., reproduces my paper from the Trans. Roy. Soc. of S.A.

In the paper on *D. intercalatum*, Gld., referred to I write:—"I have vainly endeavoured to discover more than one species among them. They are exceedingly variable, and were it not for intermediate forms quite a dozen species might be created." In going through the literature of *Dentalium* several species already created may from the description and figures be matched by my specimens, and so would seem to be but variations of the one abundant and protean species. Among these are the following:—

***Dentalium duodecimcostatum*, Brazier.**

Dentalium duodecimcostatum, Brazier, Proc. Linn. Soc., N.S.W., vol. ii., 1877, p. 56. *Type locality*—Darnley Island, Torres Straits, 30 fathoms, sandy mud (Chevert Exped.); Pillsbry, Tryon, Man. Conch., 1897-8, vol. xvii., p. 13; Hedley, Records Austr. Mus., 1901, vol. iv., p. 128, pl. xvii., fig. 31; Bossevain, Scaphopoda of Siboga Exped., 1906, p. 15.

Dredged in 22 fathoms in Gulf St. Vincent, 22 in good condition, some alive.

The only difference between the unique type specimen and mine is that the latter attain the length of only 9 lines instead of 11.

Dentalium cheverti, Sharp and Pilsbry.

Dentalium cheverti, *nom. mut.*, Sharp and Pilsbry, Tryon, Man. Conch., 1897-8, vol. xvii., p. 9; Hedley, Records Austr. Mus., 1901, vol. iv., No. 3, p. 129, pl. xvii., fig. 34; Bossevain, Scaphopoda, Siboga Exped., 1906, p. 17.

Dentalium septemcostatum, Brazier, Proc. Linn. Soc., N.S.W., 1877, vol. ii., p. 57 (*nom. D. septemcostatum*, Abich, 1859). *Type locality*—Evan Bay, Cape York, North Australia, 6 fathoms, sand (Chevert Exped.).

Dredged in 22 fathoms in Gulf St. Vincent, 2 in good condition, 13 mm. long.

Dentalium katowense, Brazier.

Dentalium katowense, Brazier, Proc. Linn. Soc., N.S.W., 1877, vol. ii., p. 56. *Type locality*—Katow, New Guinea, 8 fathoms, sandy mud and coral; Pilsbry and Sharp, Tryon, Man. Conch., 1897-8, vol. xvii., p. 9; Hedley, Records Austr. Mus., 1901, vol. iv., No. 3, p. 129, pl. xvii., fig. 33; Bossevain, Scaphopoda, Siboga Exped., 1906, p. 16.

Dredged in 15 to 22 fathoms in Gulf St. Vincent, 4 in good condition. The longest is 22.5 mm. Mr. Hedley writes: "This answers fairly to my specimens from the Gulf of Carpentaria."

Brazier in the definition of his species writes, "interstices with minute lengthened striæ." If the specimens of *D. intercalatum*, Gld., from South Australia are carefully examined under a lens when their larger end is toward the light they will show their transverse accremental striæ very plainly, but when they lie with their side toward the light these are quite indistinct, and fine axial striæ are visible. The relative validity of these axial and concentric striæ varies in different examples. They are to be seen in my specimens labelled *D. katowense*.

Dentalium thetidis, Hedley.

Dentalium thetidis, Hedley, Memoirs Austr. Mus., 1903, vol. iv., p. 327, fig. 61. *Type locality*—"In 63-75 fathoms off Port Kembla; also in 41-50 fathoms off Cape Three Points."

Dredged in 6 fathoms off Black Point, Gulf St. Vincent, 1 fresh; in 15 to 22 fathoms Gulf St. Vincent, 2 good; in 130 fathoms off Cape Jaffa, 2 fresh, 7 dead; in 300 fathoms off Cape Jaffa, 3 dead. Identified by cotypes from Mr. Hedley. In the two fresh specimens from 130 fathoms, close to the posterior end, in the furrow on each side next to the central furrow on the convex surface, are four minute holes in an axial line. These are probably only accidental. They may be the boreholes of predacious molluscs. Still it is a curious coincidence to find them in two specimens, in identically the same position; and the coincidence is more striking

since they occur only in these two instances, among several hundred *Dentalium* shells. These are often bored, but generally only in one or two holes and in other parts of the shell. However, it would be perilous to construct another species to include these two examples, which in all other respects resemble the rest under this name. My longest individual measures 20 mm. by 2.25 mm. Hedley's type is 8 mm. by 1 mm., and probably immature.

***Dentalium bednalli*, Pilsbry and Sharp.**

Dentalium bednalli, Pilsbry and Sharp, Tryon, Man. Conch., 1897-8, vol. xvii., p. 248, pl. xxxix., figs. 1, 2, and 3. *Type locality*—Gulf St. Vincent, South Australia. (?) *D. octogonum*, Lam., Angas, Proc. Zool. Soc., 1878, p. 868; Adcock, Handlist Aquatic Moll., S.A., 1893, p. 10.

Dredged in 15-22 fathoms in Gulf St. Vincent, 59 specimens with 7 ribs posteriorly and a varying number anteriorly; after the previous 7-angled varieties have been picked out.

***Dentalium octopleuron*, n. var.**

This shell is like *D. bednalli*, Sharp and Pilsbry, except that it has 8 ribs at the posterior end instead of 7. In 4 specimens the 8 costæ run throughout the shell, which may measure 20 mm. in length. But in all the others riblets arise; it may be in only one or in two, or up to all the intercostal spaces. These riblets may number as many as 4 in a space; they may equal in size the primary ribs, if they are few, or they may remain small, especially if numerous.

Dredged in 15 to 22 fathoms in Gulf St. Vincent, 88 in good condition. This variety is the most common in our shallower waters, and this would be the form found by Angas on Henley Beach and named by him *D. octogonum*, Proc. Zool. Soc., 1878, p. 868.

Type in Dr. Verco's collection.

***Dentalium robustum*, Brazier.**

Dentalium robustum, Brazier, Proc. Linn. Soc., N.S.W., 1877, vol. ii., p. 56. *Type locality*—Katow, New Guinea, 8 fathoms, sandy mud and coral (Chevert Exped.); Pilsbry and Sharp, Tryon, Man. Conch., 1897-8, vol. xvii., p. 12; Hedley, Records Aust. Mus., 1901, vol. iv., No. 3, p. 128, pl. xvii., fig. 32; Bossevain, Scaphopoda, Siboga Exped., 1906, p. 29.

Dredged in 15 to 22 fathoms in Gulf St. Vincent, 16 in good condition. These, like the type, have 9 ribs throughout. Besides these 28 other specimens from the same locality have 9 ribs posteriorly and more than 9 anteriorly.

Dentalium decemcostatum, Brazier.

Dentalium decemcostatum, Brazier, Proc. Linn Soc., N.S.W., 1877, vol. ii., p. 55. *Type locality*—Katow, New Guinea, 8 fathoms, sandy mud (Chevert Exped.); Pilsbry and Sharp, Tryon, Man. Conch., 1897-8, vol. xvii., p. 8; Bossevain, Scaphopoda, Siboga Exped., 1906, p. 27.

Dredged in 15 to 22 fathoms in Gulf St. Vincent, 10 good; with 10 ribs throughout, with 10 ribs posteriorly, and more than 10 anteriorly, 24 good.

Dentalium francisense, n. sp. Pl. xxvi., figs. 1 and 1a.

Shell moderately solid, narrow, curved, less anteriorly, translucent white, with 14 broad, low, round ribs extending throughout, separated by distinct linear interspaces. Fine transverse microscopic growth lines. Anterior aperture circular, margins thin, scarcely scalloped. Posterior end truncate, aperture small, border thick, shape oval, elongate antero-posteriorly.

Dimensions.—Length, 28 mm.; diameter—anteriorly, 3.2 mm.; posteriorly, 1.6 mm. A much younger individual measures 13.5 mm. in length, 2.4 mm. in its anterior diameter, and 8 mm. in its posterior. It is much more curved and has a slightly projecting appendical tube.

Locality.—In 15 to 20 fathoms in Petrel Bay, St. Francis Island, type with 4 others (2 alive); in 35 fathoms off St. Francis Island, 1 good; in 15 to 22 fathoms in Gulf St. Vincent, 9 good; in 55 fathoms north-west of Cape Borda, 1 good; in 15 fathoms in Geographe Bay, Western Australia, 1 good.

This shell varies. There may be only 11 ribs throughout, of which I have two examples from Gulf St. Vincent, or 11 ribs posteriorly, and more anteriorly up to 22 from intercalated riblets, 13 examples from the same locality.

There may be 12 ribs posteriorly and 12 anteriorly, and these may be typically broad and round, or rather narrow and flat, 4 examples; or of intermediate width, 9 examples; or 12 ribs posteriorly and 2 or more additional riblets anteriorly, 4 examples, all dredged in 15 to 22 fathoms in Gulf St. Vincent.

There may be 13 ribs throughout, as in 11 examples from 15 to 22 fathoms in Gulf St. Vincent.

There may be 15 ribs throughout, as in 9 examples from 15 to 22 fathoms in Gulf St. Vincent.

There may be 18 ribs throughout, as in 1 example from Port Lincoln, but this is a large old individual, with a relatively great posterior diameter, and probably had fewer ribs earlier in life.

Type in Dr. Verco's collection.

I am inclined to think that even this species is but an extreme variant of the *D. intercalatum*, Gld. It would seem as though the more initial ribs are present at the posterior end, the fewer interstitial ribs arise, which is easily understood; and the more likely they are to be round and broad and encroach on the intercostal spaces. Still one may meet with an occasional specimen starting with 11 ribs, which increase up to 24, and are rather narrow; or with one which starts with only a few ribs, 7 or 9, and these become broad and rounded.

The following species of *Dentalium* appear to be distinct from *Dentalium intercalatum*, Gld., with its many varieties:—

Dentalium hemileuron, n. sp. Pl. xxvi, fig. 2.

Shell long and narrow, very slightly curved, mostly at the hinder part, white opaque when dead, translucent when fresh, and glistening, rather thick. There are 10 axial ribs, valid, narrow, about one-fourth the width of their interspaces, less valid and less distant on the convex side. Well developed in the posterior half, then becoming quickly obsolete and absent from the anterior third. There is no increase in number as the shell grows larger, close transverse scratch marks, and circles of varying opacity make the ornament. Anterior aperture round. Posterior aperture round, but on the convex surface it has a sinus about as deep as wide with convex margins.

Dimensions.—Length, 30 mm.; greatest width, 2.4 mm.; smallest, .4 mm.

Locality.—Dredged in 300 fathoms off Cape Jaffa, type with 20 in good condition (some alive), 51 in poor; in 130 fathoms off Cape Jaffa, 37 (some alive); in 150 fathoms off Beachport, 1 poor; in 200 fathoms, 1 moderate.

In a young individual the ribs are traceable to within 2 mm. of the end, where the diameter was only .3 mm., beyond which ribs were absent and only transverse scratchings were visible; the extreme 2 mm. cap, as it were, the part beyond. The largest example measures 34 mm. Some have 9 ribs, some 8, some 11.

Diagnosis.—There are no axial interstitial riblets as in *D. thetidis*, Hedley, nor increase in the number of ribs by splitting or intercalation, as in *D. intercalatum*, Gld., and the anterior part is ribless.

Type in Dr. Verco's collection.

Dentalium zelandicum, Sowerby.

Dentalium zelandicum, Sowerby, Thes. Conch., 1860, vol. iii., p. 101, sp. 31, pl. cccxxiii., fig. 13. *Type locality*—New Zealand; Reeve, Conch. Icon., 1872, vol. xviii., pl. ii., fig. 8; Lesson, Conch. Cab. (Ed. Küster), 1896, Band. vi., Abt. 5, p. 15, sp. 23, pl. iv., fig. 4; Pilsbry and Sharp, Tryon, Man. Conch., 1897-8, vol. xvii., p. 70, pl. vi., fig. 81; Murdoch and Suter, Trans. New Zealand Institute, 1905, vol. xxxviii., p. 304, 110 fathoms off Great Barrier Island. It is from one of these specimens kindly given me by Mr. Suter that mine are identified.

Dredged in 130 fathoms off Cape Jaffa, 5 good and 12 fragments; in 110 fathoms off Beachport, 1 dead; and in 200 fathoms, 1 fragment large but eroded.

The radula, pl. xxvii., fig. 7, has the formula l.l.l.l.l., with a wide low central cusp, a lateral provided with several small denticles at its inner lower part, and an oblong rhomboidal marginal.

My largest specimen attains a length of 55 mm., with a width of 6 mm., and has 32 axial ribs, the smaller of which arise by intercalation. A specimen of 20 mm. in length, with about 2 mm. of the apical end unsculptured, has a distinct fissure of 4.75 mm. long on the convex surface; another of the same size and age shows none; a third younger still has 4 mm. unsculptured and no fissure. The fissure in this section of *Dentalium* appears to be only occasionally and not always present; just as does the appendical tube in another section.

Dentalium virgula, Hedley.

Dentalium virgula, Hedley, Memoirs Austr. Mus., vol. iv., 1903, p. 328, fig. 62. *Type locality*—"Numerous examples were taken in 63-75 fathoms off Port Kembla, in 41-50 fathoms off Cape Three Points, in 54-59 fathoms off Wata Mooli, and in 50-52 fathoms off Botany Bay."

Dredged in 60 and 62 fathoms off Cape Borda, 43 moderately good; in 90 fathoms off Cape Jaffa, 23 alive and many dead and pieces; in 104 fathoms south-west of the Neptune Islands, 7 good, 44 moderate; in 110 fathoms off Beachport, 4 alive, 21 dead; in 130 fathoms off Cape Jaffa, 3 moderate; in 150 fathoms off Beachport, 93 moderate; in 200 fathoms off Beachport, 4 poor.

Some examples have slight annular constrictions at intervals of 3 mm. Here the shell is less opaque-white, and the opacity gradually increases anteriorly, as though at the constriction the shell were thinner, representing a more rapid growth after a period of lessened activity or of rest. The appendix is visible in very early life, when the shell is extremely narrow. There seems to be a great tendency to transverse fracture when the shell is nearly filled up by in-

ternal deposit, so that numerous fragments are found from 3 mm. upwards in length, and with the appendix projecting, resemble candle-ends. When the appendix is absent in the early stages of growth the shell is not unlike juvenile *D. lubricatum*, Sowerby, but does not increase quite so rapidly, and has more marked transverse striation.

Dentalium lubricatum, Sowerby. Pl. xxvi. figs. 4 and 4a.

Dentalium lubricatum, Sowerby, Thes. Conch., vol. iii., 1860, p. 97, sp. 3, pl. ccv., fig. 56. *Type locality*—Australia; Reeve, Conch. Icon., vol. xviii., 1872, pl. vii., fig. 55; Brazier, Proc. Linn. Soc., N.S.W., vol. ii., 1878, p. 370; Lesson, Conch. Cab. (Ed. Küster), Band. vi., Abt. 5, 1896, p. 14, sp. 22, pl. iv., fig. 3; Pilsbry, Tryon, Man. Conch., vol. xvii., 1897, p. 110, pl. xix., fig. 22; Hedley, Memoirs Austr. Museum, vol. iv., 1903, p. 328; Pritchard and Gatliff, Proc. Roy. Soc., Vic., vol. xv. (N.S.), 1903, part 2, p. 222.

Sowerby's definition in full is "shell polished, elongate, white, subpellucid, slightly curved, scarcely fissured, gradually increasing." Brazier adds "off Port Jackson Heads, 45 fathoms, hard sand bottom. This fine shell was obtained when H.M.S. 'Challenger' dredged one day off Sydney Heads." Lesson says the apex is whole and is not incised, but gives no authority, whereas Sowerby defines it as "scarcely fissured." Pilsbry supplies the dimensions of Sowerby's figure, "length, 64 mm.; greatest width, 6 mm.," but it is not known whether the figure was only life size.

Hedley records the species:—"Several specimens were obtained from 63-75 fathoms off Port Kembla, of which the largest is 32 mm. long; and from 41-50 fathoms off Cape Three Points; Pritchard and Gatliff extend the locality to Cowes, Port Phillip Island, Western Port."

Dredged in 40 fathoms off Beachport, 6 good; in 55 fathoms off Cape Borda, 7 good and 7 poor; in 60 and 62 fathoms off Cape Borda, 30 good of varying size and 93 immature; in 90 fathoms off Cape Jaffa, 6 good and 3 poor; in 104 fathoms 35 miles south-west of the Neptune Islands, 2 good and 18 poor and immature; in 110 fathoms off Beachport, 3 good and mature; and in 150 fathoms, 1 moderate. No living examples were taken.

With reference to the slit my material shows that in the very early stage of growth there is no slit, but a central posterior aperture; the length of the slit may vary from a mere notch to a fissure of 2.5 mm. in length in a shell of 36.5 mm., or of 8 mm. length in an individual of 26.5 mm. It is always on the convex or ventral aspect. It is sometimes a mere crack, the two sides of which seem in apposition. At others it is an open slit of nearly $\frac{1}{2}$ mm. in width; or the posterior

third may be a slit and the anterior two-thirds a crack; and this crack may seem to be wider inside the shell, as though it were absorbed from within; and sometimes the crack connects two or three holes where the erosion has come through. In two examples there project from the posterior end on each side a short lamina about $\frac{1}{2}$ mm. long, a continuation of the internal layer of the shell. The largest individual dredged is 36.5 mm. long and 3.25 mm. at its widest part. In some examples the dorsal part near the posterior end is spotted or blotched with opaque-white.

I was fortunate enough to dredge two specimens which show the extreme posterior end, figured in pl. xxvi., fig. 4a. It is an elliptical bulb, and has a very short, slightly-contracting, round tubular posterior prolongation set somewhat obliquely to the axis of the bulb, and directed toward the convex side of the shell. Transverse rings of varying opacity are visible in the first $1\frac{1}{2}$ mm. of the shell. The figure represents the earliest 2 mm. of the shell.

Cadulus acuminatus, Tate.

Cadulus acuminatus, Tate, Trans. Roy. Soc., S.A., 1887, vol. ix., p. 194. In 1904 vol. xxviii., p. 138, I discussed it fully.

Dredged since then in 26 fathoms 30 miles south-east of Newland Head, 2 alive; and in 28 fathoms close by, 6 alive; in 62 fathoms north-west of Cape Borda, 2; and in 90 fathoms off Cape Jaffa, 67 in good condition.

Cadulus angustior, n. sp. Pl. xxvi., figs. 5, 5a, 5b.

Shell thin, slightly curved, chiefly in the posterior half, cylindrical, very gradually increasing from behind, and very slightly narrowed at the front, scarcely compressed laterally.

Fractured at the posterior end at right angles to the curve, and with a small triangular spine, 1 mm. long, projecting backwards from the convex side. Anterior end open, sloping obliquely forwards from the convex side. Margins simple and smooth. Shell smooth, diaphanous.

Dimensions.—Length, 4.6 mm.; breadth, .6 mm.

There is a transverse milky line near the front; other specimens want this, and some may have one near the posterior end.

Locality.—Twenty-six fathoms 18 miles south-east of Newland Head, outside Backstairs Passage, type with several scores alive; 62 fathoms north-west Cape Borda, 8 good.

Diagnosis.—It differs from *C. acuminatus*, Tate, in being narrower and more cylindrical, with less bulging about the middle.

With these were found many specimens of two other forms—one like a very minute *Dentalium* of about the same length, much narrower at its posterior end, which is provided with a similiar spine projecting from the convex side. The anterior end is fractured. The other form gradually increases to a diameter just about equal to that of the posterior end of the *Cadulus*, then contracts, and then expands again, and gradually attains the diameter of the middle of the *Cadulus*; here it is fractured. These appear to be three progressive stages of its growth—first, as a *Dentalium*-like shell, which becomes constricted when it reaches a certain age, then begins to form the proper *Cadulus* shell, from which it subsequently breaks off, leaving the tiny projecting spine beyond the line of fracture.

Type in Dr. Verco's collection.

Cadulus spretus, Tate and May.

Cadulus spretus, Tate and May, Trans. Roy. Soc., S.A., 1900, vol. xxiv., p. 102. *Type locality*—Port Esperance, Tasmania, in 24 fathoms (W. L. May); Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 420, pl. xxv., fig. 52; Hedley, Memoirs Austr. Mus., 1903, vol. iv., p. 328, in 41-75 fathoms off coast of New South Wales; also 5 fathoms in Dusky Sound, New Zealand; Hedley and May, Records Austr. Mus., 1908, vol. vii., No. 2, p. 113, in 100 fathoms off Cape Pillar, Tasmania.

Dredged in 55 fathoms north-west of Cape Borda, 5 good; in 62 fathoms north-west of Cape Borda, 36 good; in 90 fathoms off Cape Jaffa, 6 good; in 110 fathoms off Beachport, 6 good; in 130 fathoms off Cape Jaffa, 18 good; in 150 fathoms off Beachport, 20 moderate; in 300 fathoms off Cape Jaffa, 1 poor. These are identical with cotypes sent to me by Mr. May.

At the following localities and depths a modified form was dredged:—Sixty-two fathoms north-west of Cape Borda, 3 good; in 90 fathoms off Cape Jaffa, 22 good; in 110 fathoms off Beachport, 3 good; in 130 fathoms off Cape Jaffa, 2 good; in 150 fathoms off Beachport, 5 good and 3 moderate. These have at one point in their length a sharp annular constriction, beyond which the shell often has a slightly altered axis, and at times a somewhat different curve. The relative length of the two portions varies; the earlier or the later part may form nearly the whole, or there may be any intermediate proportion. No complete *Cadulus* similar to *C. acuminatus*, Tate, was taken in these dredgings. Mr. May says that in the type locality, where several dozen cotypes were taken, no *C. acuminatus*, Tate, were obtained. Yet the constriction at the anterior end of *C. spretus* suggests that it is only the

initial half of a *Cadulus*, similar to *C. acuminatus*, and the presence of both portions of *C. angustior*, Verco, in its own locality heightens the probability; and these more or less fully formed individuals of *C. spretus* prove it.

***Cadulus (Polyschides) gibbosus*, n. sp.** Pl. xxvi., fig. 6.

Shell smooth, polished, narrow, somewhat fusiform, slightly compressed dorso-ventrally, smaller behind; greatest diameter at the junction of the middle and anterior third; dorsal surface obtusely angled at this point; ventral surface almost uniformly convex. Anterior end sloping forward from the convex to the concave surface, mouth rather wider than high. Posterior end with a slit on each side, one on the convex surface and a wider curve on the concave. Colour milky-white, least opaque in the middle third, most in the anterior and along the concave side of the shell. It is somewhat obliquely striatedly painted. At 1 mm. from the posterior end is a transverse colourless line.

Dimensions.—Length, 9·7 mm.; greatest diameter, 1·8 mm.; diameter of the posterior end, ·45 mm.; of the anterior end, 1·1 mm.

Locality.—In 300 fathoms off Cape Jaffa, type with 3 others full grown, and 18 immature or fragments; in 130 fathoms off Cape Jaffa, 4 moderately good and 2 immature.

Type in Dr. Verco's collection.

***Turbo jourdani*, Kiener.** Pl. xxvii., figs. 1 to 6*a*.

In the Transactions of this Society, vol. xxxii., 1908, pp. 338 to 340, I gave some notes on this species, with a description of its operculum. I was unaware at the time that Dr. Cox had described the operculum in Proc. Linn. Soc., N.S.W., ser. ii., vol. iv., 1889, p. 189, from a specimen taken in Geographe Bay, Western Australia.

His shell was 14 cm. long by 12·5 cm. wide, and its operculum was 95 mm. by 80 mm. Since my Note I have received a beautiful example from Mr. Elliot, of *The Register* office, which was found with the fish in it on Wedge Island at the entrance to Spencer Gulf. This measures 21 cm. in length by 18·5 cm., in the greatest diameter of its body-whorl, so that it is just half as large again as Dr. Cox's specimen. But at Esperance Bay, in Western Australia, one was given to me measuring 22·3 cm. in length by 21 cm. in the greatest and 14 cm. in the smallest diameter of its body-whorl. It is a splendid great shell. Dr. Cox's specimen extends its *habitat* to Geographe Bay; but I took it at Rottneest Island, opposite Fremantle, and the lighthouse-keeper there (Mr.

Waters) has taken it alive. This carries it a little farther north. In September of this year Mr. Arnold, of St. Francis Island, sent me a specimen in spirit which was taken alive in Petrel Bay. This measures 11 cm. by $9\frac{1}{2}$ cm., and has an operculum measuring 44 mm. by 39 mm., and 11 mm. in its thickest part. This thickest part is adjacent to the columella, and is white, while the part immediately over the depressed centre of the spiral and the narrower outer edge is of a cloudy-brown colour.

From the animal I was able to get the radula, which measured 40 mm. by 5 mm., and contained 76 rows of teeth. The formula is 39.5.1.5.39, or, as it might more exactly be written, (32.6.1) (1.4) .1. (4.1) (1.6.32). There is a central tooth (pl. xxvii., fig. 6), which has a flange on each side to overlap the adjacent edge of its neighbours. Each of these laterals overlaps the next tooth outside. The outermost lateral (fig. 4) has its upper border bent over and provided with a strong cusp at its inner end. This gives it a different appearance from all its fellows, and when the whole series is seen this tooth stands out very prominently, as in pl. xxvii., fig. 4. There are three kinds of teeth in the marginals. The first six (fig. 2) have stout bases surmounted by a bold polished cusp, and they gradually diminish in size outwardly, as seen in fig. 2 *in situ* and in fig. 2a, when dissected out; the three inner ones overlap the outer at their bases, and otherwise lie in part behind them. The three outer have not this overlapping lamina. Then follow 32 (approximately, varying in different rows) slightly-curved, narrow flat acicular teeth with obsoletely denticulated tops (fig. 1). But there is one tooth placed *immediately behind* the first and largest lateral, solitary, out of line with the rest, and when examined *in situ* appearing somewhat sickle shaped, as in pl. xxvii., fig. 3; but when separated resembling the others, as in fig. 3a. I have not seen any notice of this particular marginal tooth in the literature of the radula at my disposal; but I find it also in that of Turbo Gruneri.

Pseudamycla dermestoidea, Lamarck.

Buccinum dermestoideum, Lamarck, 1822, Hist. Nat. Anim. S. Vert., vol. vii., p. 275.

Pyrene lineolata, Tryon, Verco, Trans. Roy. Soc., S.A., vol. xxxiv., 1910, p. 131.

Pseudamycla dermestoidea (Lam.), Pace, Proc. Mal. Soc., Lond., 1902, vol. v., pp. 255, 267. Here Pace creates a new genus, *Pseudamycla*, for this species, which he separates from *Columbella*, and of which he gives a large bibliography. At the time of its publication I separated my cabinet specimens from *Columbella* and put them in the new genus *Pseudamycla* among the

Pisaniinae, and so overlooked them when working up my *Columbellas* last year and wondered how I had so little material. Consequently I can add the following locality:—Port Elliot and Middleton beach, fairly common.

***Pseudamycla miltostoma*, Tenison-Woods.**

Columbella miltostoma, n. sp., J. E. Tenison-Woods, Proc. Roy. Soc., Tas., 1877 (1876), pp. 134-5.

Pseudamycla miltostoma (Ten.-Wds., as *Columbella*), Pace, Proc. Mal. Soc., Lond., 1902, vol. v., pp. 268-9.

Pyrene miltostoma, Tenison-Woods, Verco, Trans. Roy. Soc., S.A., vol. xxxiv., 1910.

Dredged in Gulf St. Vincent, depth unrecorded, 18 moderate.
